ERIKA ISOMURA: Yes, this is the next day. I wanted to see if they could put together kind of *that* part. So this we had done.

MIA BULJAN: Okay.

ERIKA ISOMURA: So this is similar to what we've done with the 10 and the 3.

MIA BULJAN: And now it's just an 8.

ERIKA ISOMURA: Then, we took it backwards.

MIA BULJAN: Right.

ERIKA ISOMURA: And we were fine.

MIA BULJAN: You went all the way to here?

ERIKA ISOMURA: Mm-hmm. [affirmative]

MIA BULJAN: Okay, and they had just followed the pattern?

ERIKA ISOMURA: Because we had done that before.

MIA BULJAN: 8/1,000ths.

ERIKA ISOMURA: Right, with the pattern. Then …

MIA BULJAN: Did anybody notice that 10 times 100 is 1,000, or 10 times 10 is 100? Did anybody …

ERIKA ISOMURA: Nobody mentioned it.

MIA BULJAN: Okay.

ERIKA ISOMURA: This one we didn't debrief, we just really pulled answers.

MIA BULJAN: And 10 times nothing is 10? I'm just kidding.

ERIKA ISOMURA: Yeah. 10 times nothing?

MIA BULJAN: I'm just kidding.

ERIKA ISOMURA: Yeah.

MIA BULJAN: Okay, okay.

ERIKA ISOMURA: Not much debrief, but I wanted to see if they would be able to do that and notice that the fractions appear in the multiplying up there.

MIA BULJAN: Oh, interesting.

ERIKA ISOMURA: They seemed to get it. When they talked about it, though, they said, "It's because we know fraction multiplication." So I wasn't sure …

MIA BULJAN: So they were strictly thinking of it as 8 over 1 and multiplying across in their head?

ERIKA ISOMURA: Right.

MIA BULJAN: Okay.

ERIKA ISOMURA: And I don't -- I'm not -- I wasn't convinced that they really saw kind of the relationship of the two sets of patterns.

MIA BULJAN: Yep. Okay, so you leave this one not at all convinced ... They're doing it, but you're not convinced that they're making sense of the place value-ness of it.

ERIKA ISOMURA: Right.

MIA BULJAN: So where do you go next?

ERIKA ISOMURA: So I used the same numbers basically, but I changed them. So …

MIA BULJAN: Now, this is the one we videotaped.

ERIKA ISOMURA: Yes.

MIA BULJAN: Okay.

ERIKA ISOMURA: This was all division, no multiplication, but what I started doing is this. So I had ... sorry, this side. I had done these, so the 8,000, 800, and so on. This is what we had done before. This we hadn't, starting with the smaller number and divide by 100, divide by 1,000.

MIA BULJAN: Oh.

ERIKA ISOMURA: And then that way. I really wanted to see what, if anything, they were internalizing. So this side was pretty much fine because we had been doing that. This side was a little more thinking, I think.

MIA BULJAN: Well, and it must have been hard for them to discern the pattern at first because, like, these numbers are getting smaller and these appear to be getting ... Right? It's like this number's getting bigger. Did they interpret these numbers as getting bigger? 1/100th, 1/10th?

ERIKA ISOMURA: I don't think so.

MIA BULJAN: Okay. So, then, this would've been hard for them because, like, how was that related?

ERIKA ISOMURA: We did 8 divided by ... That side was done. Then, we did 8 divided by 10. I think they used the relationship with fraction ... Sorry, the decimal and the fraction bar. Then,

that one was fine, but these there seemed to be a little bit of I'm not quite sure. There are a couple of kids that knew it, but a lot of confusion on their faces.

MIA BULJAN: Who had the idea, was it Alex, when we're dividing to do this sort of …

ERIKA ISOMURA: The invert multiply?

MIA BULJAN: The invert multiply ... Yeah, he basically made that up.

ERIKA ISOMURA: Yeah, that was Alex.

MIA BULJAN: Did he bring that up here at all?

ERIKA ISOMURA: Uh-uh. [negative]

MIA BULJAN: That, like, that 80 could've come from, like, multiplying the 10?

ERIKA ISOMURA: No, I think what happened here was there were two main things happening in their brains. They were trying to figure out the pattern because we had talked so much about the pattern.

MIA BULJAN: Yes.

ERIKA ISOMURA: And then they were trying to just figure out the division problem.

MIA BULJAN: Right.

ERIKA ISOMURA: And trying to put those together at the same time was hard. Really hard.

MIA BULJAN: Yeah. When you say 8 divided by 1/10, do you talk about it as how many 1/10s are in 8, or do you do like a part of …

ERIKA ISOMURA: I tend to talk about it as we tend to pass things out. I have eight somethings, everybody gets a piece of it. So this week, we've had lots of conversations about if I have eight, and everybody's going to get a little piece, will it be more or less than eight people that a get a share? I feel like right now …

MIA BULJAN: I think measurement division would be super helpful for making sense.

ERIKA ISOMURA: They are at the point of, "Oh, it should be more than eight people because if everybody's getting a fraction or a piece, then you'll have a bigger answer at the end."

MIA BULJAN: Cool. Right. So in the purple, it looks like -- whose idea was it to start talking about decimals here?

ERIKA ISOMURA: Mine.

MIA BULJAN: Okay, so you just went ahead and said, "We can write this another way."

ERIKA ISOMURA: The day before this, they had started doing some decimal work on the calculators. We hadn't really named them, so I still heard them calling them zero point whatever. So today -- this day, I wanted to actually name them, but not necessarily tell them they had to do it that way. It was more of a, "Oh, and by the way, when I say 8/10 and I hear that, it could look like this or it could look like this. And they mean the same thing." Several kids said, "Oh yeah, we knew that."

MIA BULJAN: Oh, no. They know everything.

ERIKA ISOMURA: Yeah.

MIA BULJAN: Naturally. Then, did you say that when I see 8/100s, I think of it like this?

ERIKA ISOMURA: I can think ... Yeah.

MIA BULJAN: When I see 8/1,000s, I think of it like this.

ERIKA ISOMURA: I believe I asked them, based on that, what 8/10,000 would look like.

MIA BULJAN: Did they see this as no zeroes, one zero, two zeroes, and then three zeroes trailing the decimal?

ERIKA ISOMURA: Yeah. Right.

MIA BULJAN: Okay, so you introduced -- just strictly as notation.

ERIKA ISOMURA: Yep.

MIA BULJAN: Okay.

ERIKA ISOMURA: With no anything.